B1 (cont)

alterations (AT) in the tissue's optical characteristics. The curve NAT corresponds to an area where no alteration took place (NAT).

Please replace the paragraph beginning at page 14, line 15 with the following re-written paragraph:

B2

The calculation of these parameters (P) in every spatial point of the area under analysis, allows the calculation of the image or images of the kinetics of the phenomenon (KI), with pixel values that are correlated with these parameters. These values can be represented with a scale of pseudocolors (**Pmin, Pmax**), the spatial distribution of which allows for immediate optical evaluation of the intensity and extent of the provoked alterations. Depending on the correlation degree between the intensity and the extent of the provoked alterations with the pathology and the stage of the tissue lesion, the measured quantitative data and the derived parameters would allow the mapping, the characterization and the border-lining of the lesion. The pseudocolor image of the phenomenon's kinetics (KI), which expresses the spatial distribution of one or more parameters, can be overimposed (after being calculated) on the tissue image, which is displayed in real-time on the monitor. Using the overimposed image as a guide, facilitates substantially the determination of the lesion's boundaries, for successful surgical removal of the entire lesion, or for locating suspicious areas in order to obtain a biopsy sample(s). Furthermore, based on the correlation of the phenomenon's kinetics with the pathology of the tissue, the measured quantitative data and the parameters that derive from them, can constitute quantitative clinical indices for the *in vivo* staging of the lesion or of sub-areas of the latter.

Please replace the paragraph beginning at page 14, line 33 with the following re-written paragraph:

B3

In some cases it is necessary to capture the kinetics of the phenomenon in more than one spectral band. This can serve in the in vivo determination of illumination and/or imaging spectral bands at which the maximum diagnostic signal is obtained. Furthermore, the simultaneous imaging in more than one spectral bands can assist in minimizing the contribution of the unwanted endogenous scattering, fluorescence and reflection of the tissue, to the optical signal captured by the detector. The captured optical signal comprises the optical signal generated by the marker-tissue interaction and the light emitted from the endogenous components of the tissue.

B3 (cont)

In many cases the recorded response of the components of the tissue constitute noise, since it occludes the generated optical signal, which caries the diagnostic information. Therefore, separation of these signals, based on their particular spectral characteristics, will result in the maximization of the signal-to-noise ratio and consequently in the improvement of the obtained diagnostic information.

Please replace the paragraph beginning at page 15, line 8 with the following re-written paragraph:

B4

Figure 2, illustrates a method for capturing in two spectral bands simultaneously and in any spatial point of the area under analysis, the kinetics of the alterations in the characteristics of the light remitted from the tissue, before and the after the administration of the contrast enhancing agent. The remitted from the tissue light, is collected and focused by the optical imaging module (L) and passes through a beam splitting (BSP) optical element. Thus, two identical images of the tissue (T) are generated, which can be captured by two detectors (D1, D2). In front of the detector, appropriate optical filters (OFλ1), (OFλ2) can be placed, so that images with different spectral characteristics are captured. Besides beam splitters, optical filters, dichroic mirrors etc, can also be used for splitting the image of the object. The detectors (D1), (D2) are synchronized so that they capture simultaneously the corresponding spectral images of the tissue (Tiλ1), (Tiλ2) and in successive time-intervals, which are stored in the computer's data storage means. Generalizing, multiple spectral images can be captured simultaneously by combining multiple splitting elements, filters and sources.

Please replace the paragraph beginning at page 15, line 22 with the following re-written paragraph:

B5

Figure 3 illustrates another method for capturing in different spectral bands simultaneously and in any spatial point of the area under analysis, the kinetics of the alterations in the characteristics of the light remitted from the tissue, before and the after the administration of the contrast enhancing agent. With the aid of a special prism (MIP) and imaging optics, it is possible to form multiple copies of the same image onto the surface of the same detector (D). Various optical filters (OFλ1),(OFλ2),(OFλ3),(OFλ4), can be interposed along the length of the optical path of the rays that form the copies of the object's image, so that the captured multiple images correspond to different spectral areas.